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Stamps et al.

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(54) **LOW POWER, SCALABLE MULTICHANNEL
HIGH VOLTAGE CONTROLLER**

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patent is extended or adjusted under 35
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claimer.

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H02J 1/00 (2006.01)

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(57) **ABSTRACT**

A low voltage control circuit is provided for individually
controlling high voltage power provided over bus lines to a
multitude of interconnected loads. An example of a load is
a drive for capillary channels in a microfluidic system.
Control is distributed from a central high voltage circuit,
rather than using a number of large expensive central high
voltage circuits to enable reducing circuit size and cost.
Voltage is distributed to each individual load and controlled
using a number of high voltage controller channel switches
connected to high voltage bus lines. The channel switches
each include complementary pull up and pull down photo
isolator relays with photo isolator switching controlled from
the central high voltage circuit to provide a desired bus line
voltage. Switching of the photo isolator relays is further
controlled in each channel switch using feedback from a
resistor divider circuit to maintain the bus voltage swing
within desired limits. Current sensing is provided using a
switched resistive load in each channel switch, with switch-
ing of the resistive loads controlled from the central high
voltage circuit.

4 Claims, 5 Drawing Sheets

